

# Epidemiological Analysis of the Nasal Trauma

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**Abstract:** ***Objectives:** To evaluate the relation between the mechanism of nasal trauma and age, gender, occupation, the residency, and nasal fracture, among Iraqi patients. **Patients and methods:** Descriptive study enrolled 124 patients attended ENT outpatient department at AL-Yarmouk Teaching Hospital in Baghdad/Iraq, from May 2015 to May 2016 complaining of recent nasal trauma, in whom the information data as age, gender, mechanism of trauma, occupations, residency, and topography of the nasal pyramid were collected and their correlation was evaluated and studied. **Results:** The frequency of the nasal trauma was detected as following; males (61.29%) and females (38.7%), the most common age group was 21-30 years (38.7%), the most common cause was personal assault (29.03%), and the fracture nasal bones was found in (82.25%), from those (60.78%) were sided deviation, and (35.29%) had central depression, regarding the occupations; (32.25%) were students, while for residency; (51.61%) where came from urban area. **Conclusions:** The nasal trauma was detected high in males, young adults, students, those where living in urban area, and the personal assault was the most frequent etiological factor. The frequency of nasal bones fracture was also high, for which sided deviated was found more than central depression.*

**Keywords:** nasal trauma, nose, nasal fracture, epidemiology, trauma

## 1. Introduction

The nose is a central structure of the facial midline that fulfills functional and aesthetic purposes, aesthetically assists in building the facial structure and functionally serves as a gateway to nasal breathing, anatomically; the nose is formed by union of rigid bony structures and flexible cartilaginous structures [1]. As it is the most prominent facial feature, the nose carries an increased risk of traumatic injury [2]. Since the nasal bones are the most fragile of the external facial bones having the least amount of tolerance to impact force [3], so relatively little force is required to fracture the nasal bones as little as 25-75 lb/in<sup>4</sup>. The fracture of nasal bones is the most common bone injury of the adult face and the third most frequent of all body fractures, and it is estimated that 40% of facial trauma cases include fractures of the nasal bones [5]. Children noses are mostly cartilaginous and possess a small nasal bone that's are softer and more compliant absorbing little energy from the force [6], they not infrequently fracture their noses and are often of greenstick fractures, the key issues to consider when examining a patient with nasal trauma include; deviation, depression, step deformities, mobility, crepitus, specific areas of point tenderness, generalized swelling, septal hematoma, and lacerations [7]. That because accurate diagnosis of nasal fractures is dependent on thorough history and physical examination [8]. So physical examination has been considered as the reference standard for nasal bone fracture diagnosis [9]. While radiographic diagnosis of nasal fracture maybe controversial in the emergency department, insurance office, or during litigation, but it has been well established by most physicians treating nasal fractures as unnecessary exam, numerous reports and studies have documented the unreliability of this exam, additionally old fractures frequently heal by fibrous union, therefore permanently visible on x-rays in examination [10]. So nasal fractures are commonly, reported due to trauma of various etiologies, as assaults, contact sports and adventurous leisure activities are common [11]. Also motor vehicle crashes and interpersonal violence are the main causes, while alcohol consumption is often a contributing factor [12]. The variability in the frequency may depend on the location in which the study has

been performed [13]. Delay in the management can often result in significant cosmetic and functional deformity. The aim of the study is to evaluate the relation between the mechanism of nasal trauma and age, gender, occupation, the residency, and nasal bones fracture among Iraqi patients.

## 2. Patients and Methods

A descriptive study enrolled 124 patients attended ENT outpatient department at AL-Yarmouk Teaching Hospital in Baghdad/Iraq, from May 2015 to May 2016 complaining of recent nasal trauma (within 2 days), in whom all information were collected including age, gender, occupation and the residency, mechanism of trauma, and the tomography of external nasal skeleton were collected and their correlation was evaluated and studied. All patients were subjected to full ENT examination with special attention to the nose including nasal skeleton examination and examination of the nasal cavity by anterior and posterior rhinoscopy, by two visits, one visit was within few hours of the injury, and the next visit was after few days later, to allow the edema of the nose to subside. The diagnosis of nasal bones fracture made primarily was clinically, by examination of nasal skeleton which include; deviation, depression, step deformities, crepitus, areas of maximum tenderness, then examination of the nasal cavity was performed to detect for septal fracture, mucosal laceration, bleeding point, and septal hematoma, while radiology for nasal bones was done to those patients with no nasal deformity, and in some cases with obvious nasal deformity for medico legal purposes, while any patient with old nasal trauma or with other maxillofacial injuries, as well as any complications of the septum other than septal haematoma was excluded from the study.

## 3. Results

Among 124 patients with nasal trauma there were 76 patients males (61.29%) and 48 patients female (38.7%), with mean age of 27.842 ( $\pm 3.519$ ), and between 0-10 years were 20 patients (16.12%), 11-20 years were 38 patients (30.64%), 21-30 years were 48 patients (38.7%), and 31-40 years were

18 patients (14.5%), regarding the mechanism of trauma as follows; personal assaults there were 36 patients (29.03%), 32 patients of them were males (88.8%), in accidents apart from fall there were 34 patients (27.41%), 22 patients of them were females (64.7%), and in road traffic accident there were 30 patients (24.19%), 16 patients of them were

females (53.3%), and in fall there were 14 patients (11.29%), 10 patients of them were children less than 10 years old (71.42%), while in sport injury were 10 patients (8.06%) all them were males, the distribution of the types of nasal trauma among the patients as it shown in table 1.

**Table 1:** The Types of trauma among patients sample

Age group	No. of patients	Gender	Fall	Accident apart from fall	Personal assault	Road traffic accident	Sport injury
0-10 years	20	Male 12	6	4	0	2	0
		Female 8	4	2	0	2	0
11-20 years	38	Male 22	2	4	10	2	4
		Female 16	2	6	2	6	0
21-30 years	48	Male 30	0	2	16	6	6
		Female 18	0	10	2	6	0
31-40 years	18	Male 12	0	2	6	4	0
		Female 6	0	4	0	2	0
Total	124	Male 76	14	34	36	30	10
		Female 48					

Regarding the nasal bones fracture; among the 124 traumatized patients only 102 patients had fracture nasal bones (82.25%), among them 62 patients (60.78%) had side deviated nose, 36 patients had depressed nose (35.29%), and 4 children (3.92%) had greenstick fracture of nasal bones, confirmed by radiological investigation, without clinical deformity in nasal pyramid,. While 22 patients with no nasal pyramid deformity (17.75%), there were 18 patients (81.81%) had only nasal bones trauma, and 4 patients (18.18%) those children with nasal bones deformity, but had greenstick nasal fracture, as shown in table 2.

**Table 2:** The distribution of nasal bones fracture with nasal pyramid topography

No deformity	4
Central depressed	36
Sided deviated	62
Total no.	102

\*4 children had greenstick fracture of nasal bones.

The topography of the nasal pyramid according the age group and the gender, the results as follows; in the age group (0-10), most common nasal pyramid topography was no deformity and it's found in (80%), while in the reminder age groups, the most common nasal deformity was sided deviation, as follows; in age group (11-20) it was (63.15%), in age group (21-30) years, it was (50%), in age group (31-40), it was (77.77%), as it shown in table 3.

**Table 4:** The relationship between mechanism of trauma and topography of nasal pyramid

Topography of nasal pyramid/ no. of patients	Mechanism of nasal trauma				
	Fall	Accident apart from fall	Personal assault	Road traffic accident	Sport injury
No deformity /26	12	10	0	4	0
Central depression/ 36	0	8	16	10	2
Sided deviation/ 62	2	16	20	16	8
Total no. of patients 124	14	34	36	30	10

The results of the relation of nasal trauma to the occupations, as follows; preschool children were 12 patients (9.67%), students were 40 patients (32.25%), employees were 30 patients (24.19%), private business were 22 patients (17.74%), and housekeeping wives were 20 patients (16.12%). While regarding residency situation, in urban area

were 64 patients (51.61%) and in rural area were 60 patients (48.38%) where subjected to nasal trauma. Regarding the complication of the nasal trauma; septal haematoma was found in 2 children (1.61%).

**Table 3:** Nasal pyramid topography distribution between patients sample

Age group	Number of patients	Nasal pyramid topography		
		No deformity	Depressed nose	Side deviated
0-10 years	20	10	2	0
		6	2	0
11-20 years	38	2	6	14
		4	2	10
21-30 years	48	4	10	16
		0	10	8
31-40 years	18	0	2	10
		0	2	4
Total	124	26	36	62

The relationship between the mechanism of the trauma and the topography of the nasal pyramid, it revealed that; regarding falling as the etiological factor, the most common type of nasal pyramid topography was no deformity, in the reminder etiologies, the most common nasal pyramid topography was sided deviation, as follows; in case of accident apart from fall there were 16 patients (47.05%), in personal assault; there were 20 patients (55.55%), in road traffic accident, there were 16 patients (53.33%), and in sport injury; there were 8 patients (80%) as shown in table 4.

#### 4. Discussion

The etiology of nasal trauma was heterogeneous and prevalence of its mechanism factors in relation to certain parameters as age, gender, nasal pyramid topography, occupations, and residential classification were studied and analyzed. In the current study reports a higher incidence of nasal trauma was found in male (61.29%), than female (38.7%), these results were comparable to other studies [14]-[18]. The high incidence in men probably because usually they are involved in hard physical jobs, as well as they are involved in outside door activities. The most common age group in the current study was between 21-30 years (38.7%), and these were almost similar to other studies [14], [16,18], while Latifi et al study found the age group 10-21 years were mostly affected (40.6%) [15]. The reason for higher frequency of the nasal trauma in this age group, may due to that the physical and psychological behavior of this young adults as it's the most active population.

In the current study the personal assaults was the most common cause (29.03%), and it was comparable to other studies [14-17], [19], [20], While other studies [18], [21] found that, fall was the most frequent cause. The variability in frequency of the cause of the trauma, depend on the location in which the study has been performed, and also perhaps due to cultural level, difference lifestyles, and the specific community characteristic, as the violence including personal assaults, becoming increasing in our society probability as result from instability in security conditions in this community, so the reflection of that, it made the our society becoming more violent, at the time of the current study performed.

Among all nasal traumatized patients, only (82.25%) had fractured nose, of them (60.78 %) was sided deviated nasal pyramid and (35.29%) had central depressed nasal bones fracture, and 4 children (3.92%) had greenstick fracture of nasal bones, confirmed by radiological investigation, without clinical deformity in nasal pyramid, these results looks comparable to other studies [15]-[17].

These finding usually was related to the direction of the force and to the type of the trauma. Regarding the occupations a result revealed it was most commonly found in students (32.25%), the results of other studies as that done by Latifi et al, found it was most commonly seen in school pupils (33.4%) [15], these results was probably depend on the social class that play an important role in the etiology of the nasal trauma, and then on society characteristics and its cultural level. About residency classification, in this study it revealed that it's more in urban area (51.61%), than in rural area (48.38%), these results were comparable to those of Latifi et al study [15]. The reason for that is probably the higher number of population in urban area which results in a lot of people interactions, and the socioeconomic or educational level differences. Regarding septal haematoma, in the current study, it was (1.61%), while other study done by Akdogan Ozgur et al, which found the incidence of the septal haematoma was (4.76%) [22].

**Conflicts of interest:** None

#### 5. Conclusions

The high frequency of nasal trauma was detected in males, age group (21-30) years, students, urban residency, and the personal assault was the most frequent etiological factor. The frequency of nasal bones fracture was also high, and it being sided deviated more than central depressed nasal bones.

#### 6. Recommendations

The current study, will make a step for the public health measure, to made the programs for preventing or at least decreasing the frequency of nasal bone trauma in this society, by instructing the people to increasing their cultural level, improving their interpersonal behavioral relationships, as well to improving the safety procedures specially in crowded public places, instructing the people to obeying the traffic rules and safety driving, also family care instructions, and to the construction of safe places to play sports.

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